WEST Search History

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DATE: Monday, March 14, 2005

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☐	L32	5557118	9
☐	L31	6221685	3
☐	L30	L29 and l28	2
☐	L29	substrate	1933155
☐	L28	L27 and l1	2
☐	L27	L25 same ohm$5	14
☐	L26	L25 near10 (ohm$5 or drain)	26
☐	L25	l17 adj3 layer	398
☐	L24	L23 and l1	13
☐	L23	5698869	79
☐	L22	5698869	79
☐	L21	L20 and l19	13
☐	L20	gate	924327
☐	L19	L18 and l1	16
☐	L18	l17 near20 (ohm$4 or drain)	76
☐	L17	si?sub.$ adj Ge?sub.$	1435
☐	L16	L15 and l13	12
☐	L15	l1 near10 gate	1135
☐	L14	L13 and l2	23
☐	L13	l3 near5 (source or drain or ohm$4)	776
☐	L12	L11 and l2	24
☐	L11	l3 near10 (source or drain)	1190
☐	L10	L9 and l2	3
☐	L9	l3 near10 ohm$5	76
☐	L8	l3 adj5 ohm$5	1
☐	L7	L6 and l4	50
☐	L6	l3 same (source or drain)	3252
☐	L5	l3 same (source or drain)	3252
☐	L4	L3 and l2	119
☐	L3	sige or (silicon adj germanium)	27128
☐	L2	oxide same gate same l1	914

WEST Search History

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DATE: Monday, March 14, 2005

Hide?	Set Name	Query	Hit Count
		DB=PGPB,USPT,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=OR	
☐	L16	L15 and l13	12
☐	L15	l1 near10 gate	1135
☐	L14	L13 and l2	23
☐	L13	l3 near5 (source or drain or ohm$4)	776
☐	L12	L11 and l2	24
☐	L11	l3 near10 (source or drain)	1190
☐	L10	L9 and l2	3
☐	L9	l3 near10 ohm$5	76
☐	L8	l3 adj5 ohm$5	1
☐	L7	L6 and l4	50
☐	L6	l3 same (source or drain)	3252
☐	L5	l3 same (source or drain)	3252
☐	L4	L3 and l2	119
☐	L3	sige or (silicon adj germanium)	27128
☐	L2	oxide same gate same l1	914
☐	L1	sic or (silicon adj carbide)	130790

END OF SEARCH HISTORY

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     (FILE 'HOME' ENTERED AT 14:29:53 ON 14 MAR 2005)

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L2        10046 SIGE OR (SILICON (A)GERMANIUM)
L3          349 L1 (10A) GATE
L4          223 L2(10A)(SOURCE OR DRAIN)
L5            0 L3 AND L4
L6          771 L2 (P) (SOURCE OR DRAIN)
L7            0 L3 AND L6
L8           12 L1 AND L6

     FILE 'CA' ENTERED AT 14:33:36 ON 14 MAR 2005
L9           27 L8
L10           1 L6 AND L3
L11         308 (DRAIN OR OHM#######) (P)L2
L12           0 L3 AND L11
L13        1090 L1(P) GATE
L14           0 L11 AND L13
L15          11 L11 AND L1

     FILE 'INSPEC' ENTERED AT 14:40:24 ON 14 MAR 2005
L16           4 L15

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=> d l8 1-4 all

L8 ANSWER 1 OF 4 INSPEC (C) 2005 IEE on STN
AN 1996:5411943 INSPEC DN A9623-8115H-044; B9612-0510D-062
TI Heteroepitaxial Si1-x-yGexCy layer growth on (100)Si by atmospheric pressure chemical vapor deposition.
AU Atzmon, Z.; Bair, A.E.; Alford, T.L. (Dept. of Chem., Bio, & Mater. Eng., Arizona State Univ., Tempe, AZ, USA); Chandrasekhar, D.; Smith, D.J.; Mayer, J.W.
SO Evolution of Epitaxial Structure and Morphology. Symposium
Editor(s): Zangwill, A.; Jesson, D.; Chambliss, D.; Clarke, R.
Philadelphia, PA, USA: Mater. Res. Soc, 1996. p.117-22 of xv+561 pp. 8 refs.
Conference: Boston, MA, USA, 27 Nov-1 Dec 1995
DT Conference Article
TC Experimental
CY United States
LA English
AB Thin heteroepitaxial films of Si1-x-yGexCy have been grown on (100)Si substrates using atmospheric pressure chemical vapor deposition at 550 and 700 degrees C. The crystallinity, composition and microstructure of the **SiGeC** films were characterized using Rutherford backscattering spectrometry (ion channeling), secondary-ion-mass-spectrometry and cross-sectional transmission electron microscopy. **SiGeC** films with up to 2% C were grown at 700 degrees C with good crystallinity and very few interfacial defects, while misfit dislocations at the SiGe/Si interface were observed for SiGe films grown under the same conditions. This difference indicates that the presence of carbon in the SiGe matrix increases the critical thickness of the grown layers. **SiGeC** thin films (>110 nm) with up to 3.5% C were grown at 550 degrees C with good crystallinity. The crystallinity of the films grown at lower temperature (550 degrees C) was less sensitive to the **flow rate** of the C source (C2H4), which enabled growth of single crystal **SiGeC** films with higher C content.
CC A8115H Chemical vapour deposition; A6855 Thin film growth, structure, and epitaxy; A7920N Atom-, molecule-, and ion-surface impact; A7125T Band structure of crystalline semiconductor compounds and insulators; A8280M Mass spectrometry (chemical analysis); A6180M Channelling, blocking and energy loss of particles; A6170J Etch pits, decoration, transmission electron-microscopy and other direct observations of dislocations; B0510D Epitaxial growth; B2520M Other semiconductor materials
CT CHANNELLING; CRYSTAL MICROSTRUCTURE; CVD COATINGS; DISLOCATION PILE-UPS; ENERGY GAP; GERMANIUM COMPOUNDS; RUTHERFORD BACKSCATTERING; SECONDARY ION MASS SPECTRA; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SILICON COMPOUNDS; TRANSMISSION ELECTRON MICROSCOPY; VAPOUR PHASE EPITAXIAL GROWTH
ST thin heteroepitaxial films; Si1-x-yGexCy layer growth; (100)Si substrate; atmospheric pressure chemical vapor deposition; Rutherford backscattering spectrometry; ion channeling; secondary-ion-mass-spectrometry; cross-sectional transmission electron microscopy; crystallinity; misfit dislocations; SiGe/Si interface; 550 to 700 C; Si; **SiGeC-Si**
CHI Si sur, Si el; SiGeC-Si int, SiGeC int, Ge int, Si int, C int, SiGeC ss, Ge ss, Si ss, C ss, Si el
PHP temperature 8.23E+02 to 9.73E+02 K
ET C*Ge*Si; C sy 3; sy 3; Ge sy 3; Si sy 3; Si1-x-yGexCy; Si cp; cp; Ge cp; C cp; Si; C; SiGeC; Ge*Si; Ge sy 2; sy 2; Si sy 2; SiGe; C*H; C2H4; H cp; SiGeC-Si; Ge

5/29/2003

10

10, 12, 14, 31, 33, 35, 36

L8 ANSWER 2 OF 4 INSPEC (C) 2005 IEE on STN
AN 1996:5388469 INSPEC DN A9622-8115H-016; B9611-0520F-038
TI Growth and photoluminescence of high quality **SiGeC** random alloys on silicon substrates.
AU Liu, C.W.; St. Amour, A.; Sturm, J.C. (Dept. of Electr. Eng., Princeton Univ., NJ, USA); Lacroix, Y.R.J.; Thewalt, M.L.W.; Magee, C.W.; Eaglesham,

D.
SO Journal of Applied Physics (1 Sept. 1996) vol.80, no.5, p.3043-7. 21 refs.
Published by: AIP
Price: CCCC 0021-8979/96/80(5)/3043/5/$10.00
CODEN: JAPIAU ISSN: 0021-8979
SICI: 0021-8979(19960901)80:5L.3043:GPHQ;1-9
DT Journal
TC Experimental
CY United States
LA English
AB We report chemical vapor deposition growth of **SiGeC** layers on (100) Si substrates. At the growth temperature of 550 degrees C, the C concentration as high as 2% can be incorporated into side (Ge content 25%) to form single crystalline random alloys by using low flow of methylsilane (0.25 seem) as a C precursor added in a dichlorosilane and germane mixture. For intermediate methylsilane flow (0.5 **sccm** -1.5 **sccm**), the Fourier transform infrared spectroscopy (FTIR) absorption spectra indicate the growth of amorphous layers. For the layers with high flow of methylsilane (12 **sccm**), there are silicon-carbide-like peaks in the FTIR spectra, indicating silicon carbide precipitation. The films were also characterized by X-ray diffraction, high resolution transmission electron microscopy, secondary ion mass spectroscopy, and Rutherford backscattering spectroscopy to confirm crystallinity and constituent fractions. The defect-free band-edge photoluminescence at both 30 K and 77 K was observed in Si/**SiGeC** /Si quantum wells, even at power densities as low as 0.5 W/cm2 and 1 W/cm2, respectively. Deep photoluminescence around 0.8 eV and luminescence due to cm D3 dislocations at 0.94 eV were not observed under any excitation conditions.
CC A8115H Chemical vapour deposition; A6855 Thin film growth, structure, and epitaxy; A7865J Optical properties of nonmetallic thin films; A7855D Photoluminescence in tetrahedrally bonded nonmetals; A7830G Infrared and Raman spectra in inorganic crystals; A6475 Solubility, segregation, and mixing; A7920N Atom-, molecule-, and ion-surface impact; B0520F Vapour deposition; B2520M Other semiconductor materials
CT CARBON COMPOUNDS; CHEMICAL VAPOUR DEPOSITION; FOURIER TRANSFORM SPECTRA; GE-SI ALLOYS; INFRARED SPECTRA; PHOTOLUMINESCENCE; PRECIPITATION; RUTHERFORD BACKSCATTERING; SECONDARY ION MASS SPECTRA; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SEMICONDUCTOR THIN FILMS; TRANSMISSION ELECTRON MICROSCOPY; X-RAY DIFFRACTION
ST random alloys; Si substrates; photoluminescence; CVD; C concentration; single crystal; dichlorosilane; germane; FTIR absorption spectra; amorphous layers; precipitation; X-ray diffraction; Rutherford backscattering; HRTEM; SIMS; crystallinity; quantum wells; dislocations; semiconductor; 550 degC; 30 K; 77 K; **SiGeC**; Si
CHI SiGeC ss, Ge ss, Si ss, C ss; Si sur, Si el
PHP temperature 8.23E+02 K; temperature 3.0E+01 K; temperature 7.7E+01 K
ET C*Ge*Si; C sy 3; sy 3; Ge sy 3; Si sy 3; SiGeC; Si cp; cp; Ge cp; C cp; Si; C; Ge; Ge*Si; Ge sy 2; sy 2; Si sy 2; Ge-Si

L8 ANSWER 3 OF 4 INSPEC (C) 2005 FIZ KARLSRUHE on STN
AN 1996:5188078 INSPEC DN A9606-6855-051; B9603-0510D-152
TI Heteroepitaxial Si1-x-yGexCy films on (100)Si substrates for future low-power applications.
AU Alford, T.L.; Bair, A.E.; Atzmon, Z. (Dept. of Chem., Bio-, and Mater. Eng., Arizona State Univ., Tempe, AZ, USA); Stout, L.M.; Balster, S.G.; Schroder, D.K.; Roedel, R.J.
SO Thin Solid Films (1 Dec. 1995) vol.270, no.1-2, p.632-6. 11 refs.
Published by: Elsevier
Price: CCCC 0040-6090/95/$09.50
CODEN: THSFAP ISSN: 0040-6090
SICI: 0040-6090(19951201)270:1/2L.632:HYFS;1-2
Conference: 22nd International Conference on Metallurgical Coating and Thin Films. San Diego, CA, USA, 24-28 April 1995

DT Conference Article; Journal
TC Experimental
CY Switzerland
LA English
AB Thin heteroepitaxial films of Si1-x-yGexCy have been investigated for potential use in low-power electronic applications. Films were grown on (100)Si substrates using atmospheric pressure chemical vapor deposition at 625 and 700 degrees C. The crystallinity, composition and microstructure of the **SiGeC** films were characterized using Rutherford backscattering spectrometry and secondary ion mass spectrometry. The crystallinity of the films was very sensitive to the **flow rate** of C2H4 that served as the C source. Si1-x-yGexCy films with up to 2.0 atomic% C and 20 atomic% Ge were epitaxial with good crystallinity. Current-voltage measurements were obtained from the electrical characterization of Si1-x-yGexCy/Si heterojunction diodes. Stable layers and low diode turn-on voltage make the Si1-x-yGexCy/Si structure an appropriate candidate for future low-power research.
CC A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; A7920N Atom-, molecule-, and ion-surface impact; A7340L Semiconductor-to-semiconductor contacts, p-n junctions, and heterojunctions; A8280M Mass spectrometry (chemical analysis); A7360F Electronic properties of semiconductor thin films; A7220F Low-field transport and mobility; piezoresistance (semiconductors/insulators); A6180M Channelling, blocking and energy loss of particles; B0510D Epitaxial growth; B2520M Other semiconductor materials; B2530B Semiconductor junctions
CT CHANNELLING; CRYSTAL MICROSTRUCTURE; CVD COATINGS; GERMANIUM COMPOUNDS; MASS SPECTROSCOPIC CHEMICAL ANALYSIS; P-N HETEROJUNCTIONS; RUTHERFORD BACKSCATTERING; SEMICONDUCTOR EPITAXIAL LAYERS; SILICON COMPOUNDS; VAPOUR PHASE EPITAXIAL GROWTH
ST heteroepitaxial films; chemical vapour deposition; atmospheric pressure; crystallinity; layer composition; microstructure; Rutherford backscattering spectrometry; secondary ion mass spectrometry; **flow rate effects**; current voltage measurements; heterojunction diodes; 625 to 700 C; **SiGeC**
CHI SiGeC ss, Ge ss, Si ss, C ss
PHP temperature 8.98E+02 to 9.73E+02 K
ET C*Ge*Si; C sy 3; sy 3; Ge sy 3; Si sy 3; Si1-x-yGexCy; Si cp; cp; Ge cp; C cp; Si; C; SiGeC; C*H; C2H4; H cp; Ge

L8 ANSWER 4 OF 4 INSPEC (C) 2005 IEE on STN
AN 1994:4835408 INSPEC DN A9502-8115H-008; B9501-0510D-074
TI Chemical vapor deposition of heteroepitaxial Si1-x-yGexCy films on (100)Si substrates.
AU Atzmon, Z.; Bair, A.E.; Jaquez, E.J.; Mayer, J.W. (Dept. of Chem., Bio, and Mater. Eng., Arizona State Univ., Tempe, AZ, USA); Chandrasekhar, D.; Smith, D.J.; Hervig, R.L.; Robinson, McD.
SO Applied Physics Letters (14 Nov. 1994) vol.65, no.20, p.2559-61. 7 refs.
Price: CCCC 0003-6951/94/65(20)/2559/3/$6.00
CODEN: APPLAB ISSN: 0003-6951
DT Journal
TC Experimental
CY United States
LA English
AB Thin heteroepitaxial films of Si1-x-yGexCy have been grown on (100)Si substrates using atmospheric pressure chemical vapor deposition at 625 degrees C. The crystallinity, composition, and microstructure of the **SiGeC** films were characterized using Rutherford backscattering spectrometry, secondary-ion-mass spectrometry, and cross-sectional transmission electron microscopy. The crystallinity of the films was very sensitive to the **flow rate** of C2H4 which served as the C source. Films with up to 2% C were epitaxial with good crystallinity and very few interfacial defects. Between 800 and 900 **sccm** of 10% C2H4 in He, the C content increased dramatically from 2% to 10% and the

as-grown films changed from crystalline to amorphous. In order to establish deposition conditions for the crystalline-amorphous phase transformation, one **SiGeC** film was deposited as the 10% C2H4 flow was increased linearly from 500 to 1500 seem during growth. When the C content reached approximately 4%, the film developed considerable stacking defects and disorder, and at around 11% C, the film became amorphous.

CC A8115H Chemical vapour deposition; A6855 Thin film growth, structure, and epitaxy; A6480G Microstructure; A7920N Atom-, molecule-, and ion-surface impact; A6140 Amorphous and polymeric materials; A6170P Stacking faults, stacking fault tetrahedra and other planar or extended defects; B0510D Epitaxial growth; B2520M Other semiconductor materials

CT AMORPHISATION; CRYSTAL MICROSTRUCTURE; ENERGY GAP; GE-SI ALLOYS; RUTHERFORD BACKSCATTERING; SECONDARY ION MASS SPECTRA; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SEMICONDUCTOR THIN FILMS; STACKING FAULTS; VAPOUR PHASE EPITAXIAL GROWTH

ST heteroepitaxial films; Si(100) substrates; CVD; crystallinity; composition; microstructure; Rutherford backscattering; cross-sectional TEM; SIMS; C content; crystalline-amorphous phase transformation; stacking defects; semiconductor; 625 degC; **SiGeC**

CHI SiGeC ss, Ge ss, Si ss, C ss

PHP temperature 8.98E+02 K

ET C*Ge*Si; C sy 3; sy 3; Ge sy 3; Si sy 3; Si1-x-yGexCy; Si cp; cp; Ge cp; C cp; Si; C; SiGeC; C*H; C2H4; H cp; He; Ge*Si; Ge sy 2; sy 2; Si sy 2; Ge-Si; Ge

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L8 ANSWER 1 OF 4 INSPEC (C) 2005 IEE on STN
AN 1996:5411943 INSPEC DN A9623-8115H-044; B9612-0510D-062
TI Heteroepitaxial Si1-x-yGexCy layer growth on (100)Si by atmospheric pressure chemical vapor deposition.
AU Atzmon, Z.; Bair, A.E.; Alford, T.L. (Dept. of Chem., Bio, & Mater. Eng., Arizona State Univ., Tempe, AZ, USA); Chandrasekhar, D.; Smith, D.J.; Mayer, J.W.
SO Evolution of Epitaxial Structure and Morphology. Symposium
Editor(s): Zangwill, A.; Jesson, D.; Chambliss, D.; Clarke, R.
Philadelphia, PA, USA: Mater. Res. Soc, 1996. p.117-22 of xv+561 pp. 8 refs.
Conference: Boston, MA, USA, 27 Nov-1 Dec 1995
DT Conference Article
TC Experimental
CY United States
LA English
AB Thin heteroepitaxial films of Si1-x-yGexCy have been grown on (100)Si substrates using atmospheric pressure chemical vapor deposition at 550 and 700 degrees C. The crystallinity, composition and microstructure of the **SiGeC** films were characterized using Rutherford backscattering spectrometry (ion channeling), secondary-ion-mass-spectrometry and cross-sectional transmission electron microscopy. **SiGeC** films with up to 2% C were grown at 700 degrees C with good crystallinity and very few interfacial defects, while misfit dislocations at the SiGe/Si interface were observed for SiGe films grown under the same conditions. This difference indicates that the presence of carbon in the SiGe matrix increases the critical thickness of the grown layers. **SiGeC** thin films (>110 nm) with up to 3.5% C were grown at 550 degrees C with good crystallinity. The crystallinity of the films grown at lower temperature (550 degrees C) was less sensitive to the **flow rate** of the C source (C2H4), which enabled growth of single crystal **SiGeC** films with higher C content.
CC A8115H Chemical vapour deposition; A6855 Thin film growth, structure, and epitaxy; A7920N Atom-, molecule-, and ion-surface impact; A7125T Band structure of crystalline semiconductor compounds and insulators; A8280M Mass spectrometry (chemical analysis); A6180M Channelling, blocking and energy loss of particles; A6170J Etch pits, decoration, transmission electron-microscopy and other direct observations of dislocations; B0510D Epitaxial growth; B2520M Other semiconductor materials
CT CHANNELLING; CRYSTAL MICROSTRUCTURE; CVD COATINGS; DISLOCATION PILE-UPS; ENERGY GAP; GERMANIUM COMPOUNDS; RUTHERFORD BACKSCATTERING; SECONDARY ION MASS SPECTRA; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SILICON COMPOUNDS; TRANSMISSION ELECTRON MICROSCOPY; VAPOUR PHASE EPITAXIAL GROWTH
ST thin heteroepitaxial films; Si1-x-yGexCy layer growth; (100)Si substrate; atmospheric pressure chemical vapor deposition; Rutherford backscattering spectrometry; ion channeling; secondary-ion-mass-spectrometry; cross-sectional transmission electron microscopy; crystallinity; misfit dislocations; SiGe/Si interface; 550 to 700 C; Si; **SiGeC-Si**
CHI Si sur, Si el; SiGeC-Si int, SiGeC int, Ge int, Si int, C int, SiGeC ss, Ge ss, Si ss, C ss, Si el
PHP temperature 8.23E+02 to 9.73E+02 K
ET C*Ge*Si; C sy 3; sy 3; Ge sy 3; Si sy 3; Si1-x-yGexCy; Si cp; cp; Ge cp; C cp; Si; C; SiGeC; Ge*Si; Ge sy 2; sy 2; Si sy 2; SiGe; C*H; C2H4; H cp; SiGeC-Si; Ge

L8 ANSWER 2 OF 4 INSPEC (C) 2005 IEE on STN
AN 1996:5388469 INSPEC DN A9622-8115H-016; B9611-0520F-038
TI Growth and photoluminescence of high quality **SiGeC** random alloys on silicon substrates.
AU Liu, C.W.; St. Amour, A.; Sturm, J.C. (Dept. of Electr. Eng., Princeton Univ., NJ, USA); Lacroix, Y.R.J.; Thewalt, M.L.W.; Magee, C.W.; Eaglesham, D.

SO Journal of Applied Physics (1 Sept. 1996) vol.80, no.5, p.3043-7. 21 refs.
Published by: AIP
Price: CCCC 0021-8979/96/80(5)/3043/5/$10.00
CODEN: JAPIAU ISSN: 0021-8979
SICI: 0021-8979(19960901)80:5L.3043:GPHQ;1-9
DT Journal
TC Experimental
CY United States
LA English
AB We report chemical vapor deposition growth of **SiGeC** layers on (100) Si substrates. At the growth temperature of 550 degrees C, the C concentration as high as 2% can be incorporated into side (Ge content 25%) to form single crystalline random alloys by using low flow of methylsilane (0.25 seem) as a C precursor added in a dichlorosilane and germane mixture. For intermediate methylsilane flow (0.5 **sccm** -1.5 **sccm**), the Fourier transform infrared spectroscopy (FTIR) absorption spectra indicate the growth of amorphous layers. For the layers with high flow of methylsilane (12 **sccm**), there are silicon-carbide-like peaks in the FTIR spectra, indicating silicon carbide precipitation. The films were also characterized by X-ray diffraction, high resolution transmission electron microscopy, secondary ion mass spectroscopy, and Rutherford backscattering spectroscopy to confirm crystallinity and constituent fractions. The defect-free band-edge photoluminescence at both 30 K and 77 K was observed in Si/**SiGeC** /Si quantum wells, even at power densities as low as 0.5 W/cm2 and 1 W/cm2, respectively. Deep photoluminescence around 0.8 eV and luminescence due to cm D3 dislocations at 0.94 eV were not observed under any excitation conditions.
CC A8115H Chemical vapour deposition; A6855 Thin film growth, structure, and epitaxy; A7865J Optical properties of nonmetallic thin films; A7855D Photoluminescence in tetrahedrally bonded nonmetals; A7830G Infrared and Raman spectra in inorganic crystals; A6475 Solubility, segregation, and mixing; A7920N Atom-, molecule-, and ion-surface impact; B0520F Vapour deposition; B2520M Other semiconductor materials
CT CARBON COMPOUNDS; CHEMICAL VAPOUR DEPOSITION; FOURIER TRANSFORM SPECTRA; GE-SI ALLOYS; INFRARED SPECTRA; PHOTOLUMINESCENCE; PRECIPITATION; RUTHERFORD BACKSCATTERING; SECONDARY ION MASS SPECTRA; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SEMICONDUCTOR THIN FILMS; TRANSMISSION ELECTRON MICROSCOPY; X-RAY DIFFRACTION
ST random alloys; Si substrates; photoluminescence; CVD; C concentration; single crystal; dichlorosilane; germane; FTIR absorption spectra; amorphous layers; precipitation; X-ray diffraction; Rutherford backscattering; HRTEM; SIMS; crystallinity; quantum wells; dislocations; semiconductor; 550 degC; 30 K; 77 K; **SiGeC**; Si
CHI SiGeC ss, Ge ss, Si ss, C ss; Si sur, Si el
PHP temperature 8.23E+02 K; temperature 3.0E+01 K; temperature 7.7E+01 K
ET C*Ge*Si; C sy 3; sy 3; Ge sy 3; Si sy 3; SiGeC; Si cp; cp; Ge cp; C cp; Si; C; Ge; Ge*Si; Ge sy 2; sy 2; Si sy 2; Ge-Si

L8 ANSWER 3 OF 4 INSPEC (C) 2005 FIZ KARLSRUHE on STN
AN 1996:5188078 INSPEC DN A9606-6855-051; B9603-0510D-152
TI Heteroepitaxial Si1-x-yGexCy films on (100)Si substrates for future low-power applications.
AU Alford, T.L.; Bair, A.E.; Atzmon, Z. (Dept. of Chem., Bio-, and Mater. Eng., Arizona State Univ., Tempe, AZ, USA); Stout, L.M.; Balster, S.G.; Schroder, D.K.; Roedel, R.J.
SO Thin Solid Films (1 Dec. 1995) vol.270, no.1-2, p.632-6. 11 refs.
Published by: Elsevier
Price: CCCC 0040-6090/95/$09.50
CODEN: THSFAP ISSN: 0040-6090
SICI: 0040-6090(19951201)270:1/2L.632:HYFS;1-2
Conference: 22nd International Conference on Metallurgical Coating and Thin Films. San Diego, CA, USA, 24-28 April 1995
DT Conference Article; Journal

TC Experimental
CY Switzerland
LA English
AB Thin heteroepitaxial films of Si1-x-yGexCy have been investigated for potential use in low-power electronic applications. Films were grown on (100)Si substrates using atmospheric pressure chemical vapor deposition at 625 and 700 degrees C. The crystallinity, composition and microstructure of the **SiGeC** films were characterized using Rutherford backscattering spectrometry and secondary ion mass spectrometry. The crystallinity of the films was very sensitive to the **flow rate** of C2H4 that served as the C source. Si1-x-yGexCy films with up to 2.0 atomic% C and 20 atomic% Ge ~~were epitaxial with~~ good crystallinity. Current-voltage measurements were obtained from the electrical characterization of Si1-x-yGexCy/Si heterojunction diodes. Stable layers and low diode turn-on voltage make the Si1-x-yGexCy/Si structure an appropriate candidate for future low-power research.
CC A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; A7920N Atom-, molecule-, and ion-surface impact; A7340L Semiconductor-to-semiconductor contacts, p-n junctions, and heterojunctions; A8280M Mass spectrometry (chemical analysis); A7360F Electronic properties of semiconductor thin films; A7220F Low-field transport and mobility; piezoresistance (semiconductors/insulators); A6180M Channelling, blocking and energy loss of particles; B0510D Epitaxial growth; B2520M Other semiconductor materials; B2530B Semiconductor junctions
CT CHANNELLING; CRYSTAL MICROSTRUCTURE; CVD COATINGS; GERMANIUM COMPOUNDS; MASS SPECTROSCOPIC CHEMICAL ANALYSIS; P-N HETEROJUNCTIONS; RUTHERFORD BACKSCATTERING; SEMICONDUCTOR EPITAXIAL LAYERS; SILICON COMPOUNDS; VAPOUR PHASE EPITAXIAL GROWTH
ST heteroepitaxial films; chemical vapour deposition; atmospheric pressure; crystallinity; layer composition; microstructure; Rutherford backscattering spectrometry; secondary ion mass spectrometry; **flow rate effects**; current voltage measurements; heterojunction diodes; 625 to 700 C; **SiGeC**
CHI SiGeC ss, Ge ss, Si ss, C ss
PHP temperature 8.98E+02 to 9.73E+02 K
ET C*Ge*Si; C sy 3; sy 3; Ge sy 3; Si sy 3; Si1-x-yGexCy; Si cp; cp; Ge cp; C cp; Si; C; SiGeC; C*H; C2H4; H cp; Ge

L8 ANSWER 4 OF 4 INSPEC (C) 2005 IEE on STN
AN 1994:4835408 INSPEC DN A9502-8115H-008; B9501-0510D-074
TI Chemical vapor deposition of heteroepitaxial Si1-x-yGexCy films on (100)Si substrates.
AU Atzmon, Z.; Bair, A.E.; Jaquez, E.J.; Mayer, J.W. (Dept. of Chem., Bio, and Mater. Eng., Arizona State Univ., Tempe, AZ, USA); Chandrasekhar, D.; Smith, D.J.; Hervig, R.L.; Robinson, McD.
SO Applied Physics Letters (14 Nov. 1994) vol.65, no.20, p.2559-61. 7 refs.
Price: CCCC 0003-6951/94/65(20)/2559/3/$6.00
CODEN: APPLAB ISSN: 0003-6951
DT Journal
TC Experimental
CY United States
LA English
AB Thin heteroepitaxial films of Si1-x-yGexCy have been grown on (100)Si substrates using atmospheric pressure chemical vapor deposition at 625 degrees C. The crystallinity, composition, and microstructure of the **SiGeC** films were characterized using Rutherford backscattering spectrometry, secondary-ion-mass spectrometry, and cross-sectional transmission electron microscopy. The crystallinity of the films was very sensitive to the **flow rate** of C2H4 which served as the C source. Films with up to 2% C were epitaxial with good crystallinity and very few interfacial defects. Between 800 and 900 **sccm** of 10% C2H4 in He, the C content increased dramatically from 2% to 10% and the as-grown films changed from crystalline to amorphous. In order to

establish deposition conditions for the crystalline-amorphous phase transformation, one **SiGeC** film was deposited as the 10% C2H4 flow was increased linearly from 500 to 1500 seem during growth. When the C content reached approximately 4%, the film developed considerable stacking defects and disorder, and at around 11% C, the film became amorphous.

CC A8115H Chemical vapour deposition; A6855 Thin film growth, structure, and epitaxy; A6480G Microstructure; A7920N Atom-, molecule-, and ion-surface impact; A6140 Amorphous and polymeric materials; A6170P Stacking faults, stacking fault tetrahedra and other planar or extended defects; B0510D Epitaxial growth; B2520M Other semiconductor materials

CT AMORPHISATION; CRYSTAL MICROSTRUCTURE; ENERGY GAP; GE-SI ALLOYS; RUTHERFORD BACKSCATTERING; SECONDARY ION MASS SPECTRA; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SEMICONDUCTOR THIN FILMS; STACKING FAULTS; VAPOUR PHASE EPITAXIAL GROWTH

ST heteroepitaxial films; Si(100) substrates; CVD; crystallinity; composition; microstructure; Rutherford backscattering; cross-sectional TEM; SIMS; C content; crystalline-amorphous phase transformation; stacking defects; semiconductor; 625 degC; **SiGeC**

CHI SiGeC ss, Ge ss, Si ss, C ss

PHP temperature 8.98E+02 K

ET C*Ge*Si; C sy 3; sy 3; Ge sy 3; Si sy 3; Si1-x-yGexCy; Si cp; cp; Ge cp; C cp; Si; C; SiGeC; C*H; C2H4; H cp; He; Ge*Si; Ge sy 2; sy 2; Si sy 2; Ge-Si; Ge

L20 ANSWER 1 OF 1 CA COPYRIGHT 2005 ACS on STN
AN 139:76505 CA
ED Entered STN: 24 Jul 2003
TI Cold-wall UHV-CVD for Si-**SiGe(C)** epitaxial thin films
AU Mashiro, Supika; Date, Hiroki; Hitomi, Satoshi; Sakai, Junro
CS Anelvo Corp., Tokyo, Japan
SO Solid State Technology (2002), 45(11), 49-50
CODEN: SSTEAP; ISSN: 0038-111X
PB PennWell Corp.
DT Journal
LA English
CC 75-1 (Crystallography and Liquid Crystals)
Section cross-reference(s): 76

AB For the fabrication of high-performance integrated circuits, high-quality Si and **SiGe(C)** epitaxial films are required. For this purpose, a multi-chamber, single-wafer, cold-wall UHV-CVD system is presented. Films of $Si_{1-x}Ge_x(C)$ were grown on Si wafers with and without SiO_2 or Si_3N_4 patterns. The precursors applied were Si_2H_6, GeH_4, and $MeSiH_3$; no carrier gas (H_2) was necessary. The films were characterized by XRD, SEM, and SIMS. The Ge fraction x in the $Si_{1-x}Ge_x$ films was controlled by the **flow rate** ratio of GeH_4/Si_2H_6. The incubation time before the growth process started was shortened by addition of Cl_2 to the precursor mixture Epitaxial film growth was achieved with the UHV-CVD system. Films grown at a temperature of 520-640° exhibited very low O_2 levels and defect densities.

ST integrated circuit fabrication **silicon germanium carbon** film CVD; epitaxial film growth stoichiometry control **silicon germanium carbon** CVD

IT Integrated circuits
Vapor phase epitaxy
(cold-wall UHV-CV

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L9   ANSWER 1 OF 6  CA  COPYRIGHT 2005 ACS on STN
AN   141:305601  CA
ED   Entered STN:  21 Oct 2004
TI   Manufacture method of growing silicon germanium
     carbon film on silicon substrate
IN   Fang, Yean-Kuen; Hsieh, Wen-Tse; Wang, Han-Pang; Tsair, Yong-Shiuan
PA   National Science Council, Taiwan
SO   Taiwan, 11 pp.
     CODEN: TWXXA5
DT   Patent
LA   Chinese
IC   ICM  H01L021-31
CC   76-3 (Electric Phenomena)
FAN.CNT 1
     PATENT NO.             KIND    DATE          APPLICATION NO.        DATE
     ---------------        ----    --------      --------------------   --------
PI   TW 499716               B      20020821      TW 2001-90105746       20010312
PRAI TW 2001-90105746               20010312
CLASS
 PATENT NO.      CLASS  PATENT FAMILY CLASSIFICATION CODES
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 TW 499716       ICM    H01L021-31
AB   This invention provides a manufacture method of growing Si Ge C film on Si
     substrate, which includes the following steps: providing a Si substrate;
     placing the Si substrate into a CVD chamber; and introducing gases
     required to grow a Si1-x-yGexCy film and adjusting flow
     rate to grow a SiGeC film using CVD, in which the gases
     include propane (C3H8) for use as C source for the Si Ge C film.
ST   chem vapor deposition silicon germanium carbide
IT   Vapor deposition process
        (chemical; manufacture method of growing silicon germanium
        carbon film on silicon substrate)
IT   79192-19-1P
     RL: DEV (Device component use); PNU (Preparation, unclassified); PREP
     (Preparation); USES (Uses)
        (manufacture method of growing silicon germanium
        carbon film on silicon substrate)
IT   7440-21-3, Silicon, uses
     RL: DEV (Device component use); USES (Uses)
        (substrate; manufacture method of growing silicon
        germanium carbon film on silicon substrate)
IT   74-98-6, Propane, reactions
     RL: RCT (Reactant); RACT (Reactant or reagent)
        (vapor deposition precursor; manufacture method of growing silicon
        germanium carbon film on silicon
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> d his

     (FILE 'HOME' ENTERED AT 13:09:23 ON 10 FEB 2005)

     FILE 'INSPEC' ENTERED AT 13:09:32 ON 10 FEB 2005
L1          530 SIGEC OR SIGE:C
L2           36 SILICON (A)GERMANIUM (A)CARBON
L3          554 L1 OR L2
L4        15450 ETHYLENE
L5        18591 SCCM OR FLOW(A)RATE
L6           95 L4 (P)L5
L7            0 L6 AND L3
L8            4 L3 AND  L5

     FILE 'CA' ENTERED AT 13:25:23 ON 10 FEB 2005
L9            6 L8
L10           0 L9 NOT L8
L11     1545735 BORON OR B
L12           0 L9 AND L11

     FILE 'INSPEC' ENTERED AT 13:26:04 ON 10 FEB 2005
L13           0 L8 AND L11
L14      720576 5
L15           2 L8 AND L14
L16      720576 5
L17      720576 5
L18           0 L8 AND DOP########
L19           0 L8 AND BORON

     FILE 'CA' ENTERED AT 13:30:12 ON 10 FEB 2005
L20           1 L9 AND DOP#######

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